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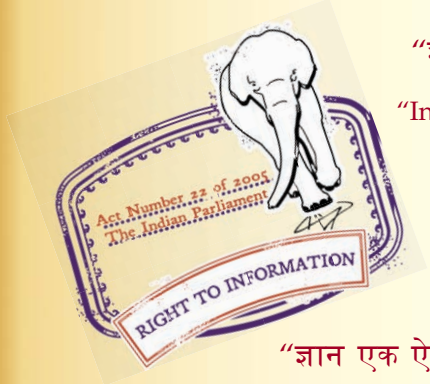
IS 3937-1 (1974): Recommendations for socketing of wire ropes, Part 1: Socketing with zinc [MED 10: Wire Ropes and Wire Products]



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Satyanarayan Gangaram Pitroda
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"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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Indian Standard

(Reaffirmed 2001)

RECOMMENDATIONS FOR SOCKETING OF WIRE ROPES

PART I SOCKETING WITH ZINC

(First Revision)

1. Scope — Covers the procedure to be adopted for socketing of stranded wire ropes by molten zinc so that the maximum safety is assured.

2. Material — The material chosen for socketing shall be zinc conforming to IS : 209-1966 'Specification for zinc (*second revision*)'. The composition, melting point and pouring temperature of the metal are given in Table 1.

TABLE 1 COMPOSITION, MELTING POINT AND POURING TEMPERATURE OF SOCKETING METAL

Gr	Composition *Min* Zn	Approximate Melting Point	Pouring Temperature
Zn 99·99 of IS : 209-1966	99·99 percent	420°C	450 to 480°C

3. Procedure

3.1 Carefully seize the wire rope just below the point where it is to be cut with tinned or galvanized seizing wires of the sizes given in Table 2 and cut the wire rope.

TABLE 2 DIMENSIONS OF SEIZING WIRE

Nominal Diameter of Wire Rope	Seizing Wire Diameter
mm	mm
8 to 24	1·0
26 ,, 36	1·6
38 ,, 56	2·0

3.2 Measure from the end of rope a distance indicated in Fig. 1 and 2. Provide a second seizing at this point.

3.3 Thread the rope end through the socket. Remove the seizing at the cut end and unlay the wire rope.

3.4 When the wire ropes have a fibre core, it shall be cut so as to remove the fibre core up to the throat of the socket when drawn into the position in socket.

3.5 A metallic core, that is, an independent wire rope core or wire strand core shall not be cut but shall be unlaid to form a brush or bend inwards to form a hook with other strands.

3.6 Splay each individual wire separately into a brush. The wire may also be folded in the form of hook facing inwards towards centre of the rope. The hook shall not be more than one-third the length of the basket.

3.7 Clean the basket and brush to remove all grease and dirt; a degreasing agent or trichloroethylene may be used. Petrol or paraffin is not recommended. When using a degreasing agent, the fluid should be liberally used and worked well into the throat of the brush. Remove the fluid and lubricant emulsion by washing off with hot water. Shake off the surplus water and dry the brush, it is essential that it is held downwards in the vertical position to prevent degreasing fluid, water or solvent being trapped in the throat of the brush or percolating back into the main body of the rope forming a source of corrosion. Trichoroethylene or other organic solvent shall only be used in

Gr 2

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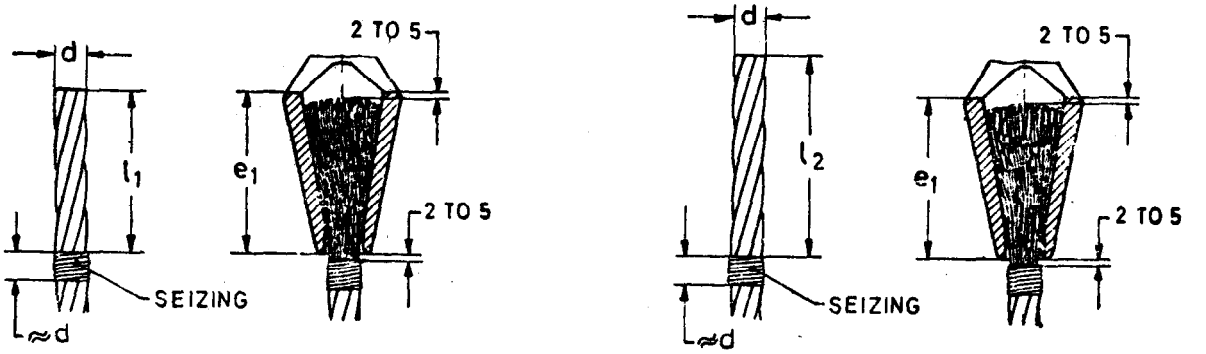
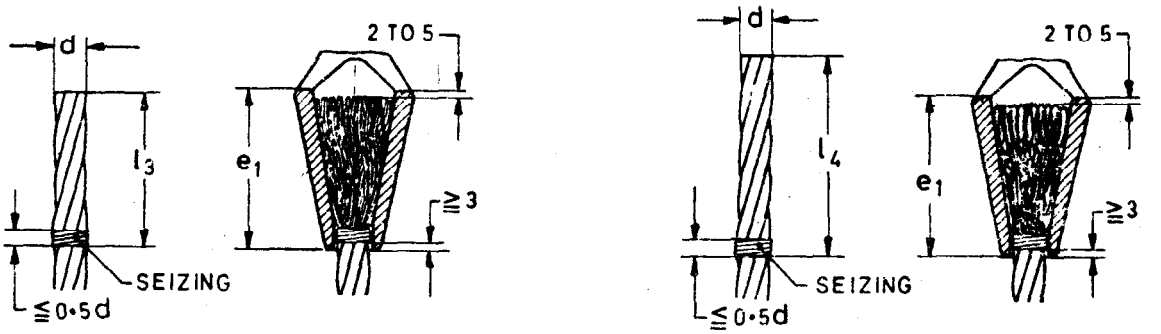
well ventilated conditions. When used indoors, purpose designed equipment shall be used. After cleaning, the wires should first be dried and protected from contamination and also kept clear and dry until the molten metal is poured.

3.8 The cleaned brush end is drawn into position in the socket basket with the ends of the wires or hooked ends flush with the end of the basket. Seal the junction of the rope of the socket with asbestos yarn or asbestos fibre to prevent escape of molten zinc and clamp the socket complete with the rope in a vertical position with large end of the socket uppermost. Care should be taken that the axes of the wire rope and the socket are in line and the rope is sensibly vertical over a length of at least 24 times the wire rope diameter from the socket end.



All dimensions in millimetres.

FIG. 1 ARRANGEMENT OF SEIZING, SEIZING OUTSIDE SOCKET



All dimensions in millimetres.

FIG. 2 ARRANGEMENT OF SEIZING, SEIZING INSIDE SOCKET

3.9 Gradually and evenly heat the socket around the outside circumference by a blow lamp or by any other suitable method so that the basket surface temperature is raised between 100 and 200°C.

3.10 The molten zinc at the proper pouring temperature specified in Table 1 is poured into the heated socket. Before pouring dross accumulated on the surface of bath should be skimmed off. Care should be taken that only the clean bright fluid metal at the right temperature free from dross is poured into the socket. The ladle should be of sufficient capacity to hold the molten zinc to fill the socket in one filling. Pouring should be continuous, uniform until the metal completely fills the socket. To ensure that the poured metal penetrates the interestice between the wires completely tap the socket lightly, if necessary, while the molten zinc is being poured.

3.11 After pouring the metal, allow the socket to cool gradually and do not disturb the socket till the metal is fully set and the socket cools to air temperature. The rope adjoining the socket shall then be carefully cleaned and treated with preservative dressing. After cooling, it is recommended that the seizing at the throat be removed enough to show any broken wire that may appear adjacent to the throat during service.

3.12 It is not necessary to use any flux with zinc, however, as the molten zinc has a tendency to oxidize in contact with air, it is necessary to protect the surface of the molten zinc with bone charcoal to prevent oxidation. While molten zinc is being poured into socket, care has to be taken that none of the charcoal is carried along with the molten zinc into the socket.

EXPLANATORY NOTE

This standard was originally issued in 1967. The present revision has been taken up to include the provision for socketing of wire ropes with molten zinc. Opportunity of this revision taken to bifurcate the standard into two parts; Part I of the standard lays down the requirements for socketing of wire ropes with zinc and Part II lays down the requirements for socketing of wire ropes with white metal.

Requirements pertaining to sockets have been excluded from the standard and it is proposed to include these requirements in a separate standard dealing with sockets for mining.

Socketing by either zinc or white metal provides equal efficient and permanent terminal attachment for wire ropes. They are simple, practical for all the wire rope diameters. On the other hand their execution requires that all care be adopted in the operation, as inspection of the socket once it is completed is almost impossible.

In the preparation of the standard, assistance has been derived from the following:

ISO/DIS 3189 Sockets for wire ropes — General requirements. International Organization for Standardization.

Notice 353/C.G.P. 9-1963 Patte Coulee Poor Cable Rond En Acier (Cast end for round steel wire ropes). Association Des Industriels De Belgique.

DIN 83315 : 1963 Vergiessen von Verzinkten Drahtseilen fur den Schiffbau in Seillulsen mit Vergussmetallen; Richtlinien (Sweating of galvanized wire ropes for ships used in wire rope sockets with special metals, instructions). Deutscher Normenausschuss.

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